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Point: Sprawl and accessibility

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At least until recently, accepted wisdom has held that sprawl is recent, particularly American and that it has been caused by a rapid growth in automobile ownership and use. It is also widely believed that for economic, social, environmental and aesthetic reasons sprawl is bad and should be stopped. A good way of doing this, many observers believe, is to promote "Smart Growth." Higher density and more compact urban patterns, proponents believe, would lead to less "automobile dependence," more walking and transit use and, as a result, better access to jobs and other activities and a better environment.[1]

1 Misreading history

There are several problems with this formula. The first is that the diagnosis relies on an erroneous reading of history. Sprawl is neither recent nor particularly American, and it was in full force long before the advent of the private automobile. If sprawl is the outward movement of people at lower densities without any over-arching planning or control, then sprawl is as old as cities. The reasons for this are not hard to find. Living at the center of most cities from the earliest times until very recently meant congestion, pollution and highly unsanitary living conditions for most of the urban population. Whenever a new group of people had sufficient resources, many families were likely to try to escape the city, either by moving to the suburbs or getting a weekend or country house in the exurban belt beyond the suburban edge. This pattern was already fully visible in ancient Rome where those fortunate enough to have private transportation, meaning horses and carriages, were able to spend at least part of their time at the sea or in the cool hills east of the city.

In the modern world, the outward sprawl of London from the beginning of the industrial revolution until about 1950 was certainly as great as anything seen since World War II in the United States. This is not surprising since London was the largest and most affluent city in the Western world. With densities of over 100,000 people

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[1] Many of the ideas in this essay are adapted from my book *Sprawl: A Compact History* (2005). For a classic statement on how cities should be remade to make it easier to provide transit see Newman and Kenworthy (1999)

at the center, it was not just unpleasant. It was deadly. The rudimentary sanitation systems in the poorest quarters provided little protection against infection. Plagues swept through city centers at regular intervals killing off vast numbers of people. For this reason it is not surprising that as soon as they were able, families moved outward.

In the eighteenth century, for example, thousands of families departed the old medieval city of London. Many of the less affluent moved east toward the burgeoning industrial areas by the docks in eastern London. They only moved a short distance because their only means of getting around was walking, and they were obliged to live near their place of work. The more affluent Londoners tended to move west into the newly developed squares and terraces of what was then the suburban edge of London but is now the central West End. These neighborhoods were much lower in density, quieter and more hygienic than those at the center of London. For many heads of household this meant a long-distance commute to jobs back in the center of London. This was only possible because of the efficiency of privately owned horse-drawn carriages. The same was true of those moving even further from the city center, to what were then remote agricultural towns in the countryside around London.

Virtually the entire history of modern cities is the history of newer and more efficient modes of transportation and the spreading outward of urban activity at ever lower densities. Every period of economic growth allowed a new group of people to move out. By the nineteenth century this had become a mass movement as even middle-class families could afford to do live at some distance from the center. In response there appeared a rapid succession of new means of urban transportation.

The advent of the railroad and public transportation made it possible to vastly increase the outward migration. In the London area miles of sturdy brick row houses were built all around the suburban periphery from Camberwell and Clapham on the south to Islington and St. John's Woods in the north. For many of the families moving into these houses they were small miracles. Even the most modest row house gave them some measure of the kind of privacy, mobility and choice that were once only available to the wealthiest and most powerful urban dwellers. To an intellectual and artistic elite of the day, however, these new developments were cheap, ugly boxes put up by greedy developers that defaced the beautiful British countryside. Nor did this elite necessarily regard the mobility provided by public transit and the railroad as a blessing. The railroads "only encourage the common people to move about needlessly" opined the Duke of Wellington.

It is certainly true that the automobile was a major force in allowing sprawl to continue in the form it did in the twentieth century just as the railroad had been a powerful force in the nineteenth. But the experience of London over the previous centuries demonstrates that sprawl didn't require the automobile. Even Los Angeles, widely considered to be the automobile city par excellence, became the world's most dispersed large city already by 1900 well before the full impact of the automobile started

to be felt. It was the railroad and the street car that allowed this to happen. And contrary to what many people assume, Los Angeles has been getting denser rather than less dense for at least the past half century during an era when most people have used the automobile as their primary means of getting around. The Los Angeles urbanized area (the Census Bureau's functional definition of "urban" that includes a central city and all of the surrounding land above 1,000 people per square mile) has increased in density from barely over 4,000 people per mile to over 7,000 people per square mile, making it the densest urban area in the United States. It is this increasing density, not sprawl, together with the fact that Los Angeles has one of the lowest provisions of freeway miles per capita in the nation, that has led to increasing traffic congestion in Los Angeles. This has happened despite the fact that Los Angeles has one of the most extensive transit systems and lowest car ownership rates in the country today.

One of the things that all of these erroneous preconceptions about sprawl demonstrate is the complexity of urban systems and the way that in these complex systems almost every cause is also an effect and vice versa. Thus, rather than say, as many people do, that the automobile was a principal cause of sprawl in the twentieth century, it would probably be at least as accurate to say that a desire for lower density living was the reason automobile makers were able to transform themselves from a small industry turning out luxury products to an enormous industry making a product that has become a standard fixture in affluent households worldwide.

It also suggests that all transportation means are profoundly ambiguous in their impact on the built environment. The railroad, surely a key factor in creating the dense industrial city of the nineteenth century, was also a key factor in its decentralization. Likewise the automobile, which clearly has aided in the dispersal of cities, can also play a role in making them denser.

Curiously, as Los Angeles has become more dense over the last 50 years, the large, old cities of the American East and Europe have continued to become less dense. No large European urban area now counts even 15,000 people per square mile and many, particularly highly affluent northern European urban areas like Hamburg or Copenhagen, are now less dense than Los Angeles. With this decline in density has come a spectacular rise in automobile ownership and use. Despite draconian governmental policies to inhibit automobile use and the expenditure of billions of dollars on public transportation, transit ridership in Europe has remained largely flat since World War II while automobile ownership and use have soared. Although many people like to observe that Europeans still drive less than Americans, in fact the upward trajectory of automobile ownership and automobile use have increased in Europe in almost exactly the same way as in the United States, simply with a time lag due to a lag in affluence. So, the pattern of American car ownership as it started to take off in the 1920s is almost identical to that of Europe since the 1960s. And, as the American market reaches saturation, European car ownership and use are now rising quite a bit faster than in

the United States.

One of the most important reasons for the dramatic rise in automobile use everywhere has been the way it has vastly increased mobility for most people. Because the automobile, like the private horse-drawn carriage before it, allows individuals to travel directly from point A to point B whenever the owner wishes, travel times using the automobile are almost always much shorter than travel times using public transportation. This explains, for example, why average commuting times are so much longer in dense, urban areas with heavy transit use, for example Tokyo with over 11,000 people per square mile in its urbanized area, than they are in less dense regions, for example Los Angeles. This is true as we have already remarked, even though the road network in the Los Angeles area has not been expanded to keep up with population growth or the increase in density. Likewise in the Paris region, where commuting times by individuals who use the automobile are on average about 27 minutes, for those using public transportation the figure is 53 minutes. Is it any wonder that as urban dwellers become more affluent and value their time more highly they almost invariably shun slower and less comfortable means of transportation for faster, more comfortable ones?

This shift in transportation mode might also provide a hypothesis for why densities appear to be converging across the world. As Los Angeles and virtually all of the low-density but fast-growing regions of the American West increase in density while the higher-density older urban areas in the American East and Europe decline in density, they appear to be converging in a band between 5,000 and 15,000 people per square mile. It is possible that this represents a new early twenty-first century urban norm in which densities are high enough to support much traditional urban culture but still allow for most of the inhabitants to own and use automobiles.

2 Policy implications

The almost universal decline in density and rise in automobile ownership within the affluent world over the last several centuries undermines many of the key elements of "Smart Growth" orthodoxy.

Take, for example, the notion of "automobile dependency," so forcefully described by Peter Newman and Geoffrey Kenworthy in a series of books and articles[2]. They have tried to argue that sprawl has led to higher energy costs, longer commutes and more highway congestion. These ideas have been strongly rebutted by Peter Gordon and Harry Richardson, among others, who have pointed out that the only reason commuting times remained fairly stable through much of the twentieth century despite an enormous increase of population in many American cities was precisely because these

[2] Their first important work was *Cities and Automobile Dependence: An International Sourcebook* (1989). More recently, they published *Sustainability and Cities* (1999).

cities spread out. Because both jobs and housing decentralized, this allowed for the creation at the expanding periphery of road systems better than those that can be found in the center of most older cities.(see, for example, Crane and Chatman 2003; Gordon and Richardson 2001)

It is true that many people in the United States and Europe today are dependent on their automobiles because there is no other viable means to meet all of their daily transportation needs. This is not surprising given that it usually requires a fairly high level of density, often estimated at 10,000 people per square mile, to support a substantial transportation system, and even then this system only works well where trip origins and destinations are tightly clustered, for example when one side of the trip is a place with a very high density of jobs, for example a downtown or an airport. The majority of urban territory in the affluent western world falls well below the 10,000 threshold and increasingly the dominant position central cities held as a center of jobs for an entire region is being eroded with the growth of regional sub-centers.

In this context the phrase "automobile dependency" can seem as silly as "refrigerator dependency." It is possible for people to do without refrigerators but why would anyone choose to do so? Likewise with automobiles. There are obviously some people who can't or don't wish to drive, and they need to be accommodated. But trying to force the vast majority of citizens who would prefer driving to instead take buses and trains in an effort to assure adequate transit for those who don't drive appears doomed to failure. The needs of the first group are often completely different from the needs of the second.

Of course, many advocates of Smart Growth believe that automobile travel is inherently bad for other, especially environmental reasons. They argue that automobile driving causes pollution and leads to climate change. However, automobiles have increased in fuel efficiency and decreased their emissions to the point where the average automobile uses barely more energy per passenger mile traveled and emits no more greenhouse gases per passenger mile traveled than an average bus, and buses carry the vast majority of transit passengers in the country today. Although this may sound remarkable at first glance, it is important to remember that buses tend to get very low gasoline mileage and over 24 hours and 7 days a week the average number of people in a bus is low. The real problem with both the automobile and the bus is the fuel source. Solving this problem should be the focus of environmental policy, not trying to substitute one means of transportation for another.

Even if less automobile use were inherently desirable, there is a good deal of evidence to suggest that the new higher density, mixed use land patterns proposed by Smart Growth proponents would not, by themselves, result in any substantial increase in bus or rail use, reduction in automobile use or enhanced mobility. It appears that it would take enormous increases in density or vastly improved transit speed and in reliability to coax even half of new drivers out of their cars. If densities increased to the point

where most people used public transportation, this would still involve a major increase in the number of automobile drivers within a given area guaranteeing that congestion would be much worse. And unless all of the public transit were grade-separated, the transit itself would add greatly to this congestion.

3 Eyes on the future rather than the past

One of the worst aspects of the fight against sprawl has been the way its enemies have tended to focus their attention on reviving some imagined golden age of the past when cities were denser, and supposedly more socially just, environmentally sound and efficient. In fact this golden age never existed. Almost all objective indicators of the quality of urban life have improved markedly with their rapid decentralization over the last half century. Certainly there are enormous problems to be faced, but there is little indication that trying to force the city back into the mold of the nineteenth century industrial city will help.

In the realm of transportation, for example, the focus on sprawl, which has tended to pit private versus public transportation and transit versus the automobile, seems to have been counter-productive. Since the 1960s the drum roll of criticism of urban highways appears to have played a significant role in reducing the public's willingness to pay for more roads, but the poor performance of new transit systems has not brought any corresponding upsurge in willingness to pay for these either. Instead there have been attempts to shift funding priorities within existing transportation dollars and these shifts have usually been counter-productive from the standpoint of the transportation system as a whole. For example shifting funding from roads, which are used by the vast majority of Americans, into transit, which is used by a tiny minority, has done little to reverse the decline in modal share of transit, but it has led to decreased spending on roads and has been partially responsible for major increases in congestion. The focus of many transit advocates for rail over bus, meanwhile, has resulted in many cities in a transfer of funding from heavily used existing bus lines to lightly used new rail lines, resulting in a declining transportation capacity overall.

The fight against sprawl and the resulting battle between advocates for roads and for transit has also made it much more difficult to move forward with new technologies and transportation modes. Never have the possibilities been brighter for new forms of transport that break out of the old categories of private versus public and automobile vs transit and that promise to provide some real gains in accessibility while simultaneously reducing unfortunate environmental by-products.

Unfortunately the attacks on highways and sprawl have helped to destroy the consensus about infrastructure investment for the future that characterized much of the past century. From the streetcars and rapid transit lines of the late nineteenth century to the superhighways and airports of the mid-twentieth there was enormous confidence

that with the building of infrastructure we could overcome many of the apparently intractable transportation problems of the past, and indeed that is what happened as the new forms of transportation enlarged enormously the range of choices available to the average American family. Particularly since the 1960s, however, there has been a change of mood which corresponds pretty closely with the growth of anti-sprawl sentiment.

A great deal of what is written about transportation today suggests either that there is no solution to urban transportation problems or that we need to push cities back into the forms they had at some previous date in history. Anti-sprawl activists were very successful with concepts like "induced demand" and slogans like "We can't build our way out of congestion" despite the obvious fact that most of the automobiles seen on newly opened highways were there because of latent demand, not newly induced demand, and many urban areas have indeed gone a long way toward building themselves out of congestion whereas those areas that have lagged behind in road building have seen congestion rise very dramatically.

It is quite likely that within the next few decades technology will shape a fundamentally new transportation picture. Using new fuel sources, smaller, more flexible vehicles on guideways or in the air, and intelligent transportation systems that can operate faster, more safely and at much higher capacity than today's systems, the implications for the city are profound. Of course we can only guess what the new transportation systems will look like. In the meantime trying to remake our very long-lived urban built environment so that it will force more people to ride in old fashioned buses and trains is a classic case of the tail wagging the dog. It is a short-term fix that will not only not solve current problems but could easily inhibit much better means of transport in the future.

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